

DMS-8600, Delineators and Object Markers

Overview

(Formerly D-9-8600, Delineators and Object Markers).

Effective Date: August 1998 – May 2003.

This specification shall govern for the materials, composition, quality, sampling, and testing of delineators and object markers.

Bidders' and/or Suppliers' Requirements

All prospective bidders and/or suppliers are notified that before any material is considered, it shall be of the design and shape shown or previously approved by the Director of CST/M&P.

Prequalification

Manufacturers who desire to prequalify their products should contact: Texas Department of Transportation, Construction Division, Director of Materials & Pavements Section (CP51), 125 East 11th Street, Austin, TX 78701-283.

Prequalification consists of a visual examination of the bracket by CST/M&P to insure there are no obvious deficiencies in size, materials, fasteners, or adhesives.

When an adhesive is used, it shall be the adhesive recommended by the manufacturer of the unit(s).

The list of approved materials will be maintained by CST/M&P.

The manufacturers shall notify CST/M&P of any changes in materials and submit additional samples for prequalification.

Payment***Procurement by the State***

Payment for all materials governed by this specification shall be in accordance with provisions of the purchase order awarded by the State.

Contracts

All materials governed by this specification utilized by the manufacturer in contract projects will be paid for in accordance with TxDOT *Standard Specifications for Construction of Highways, Streets, and Bridges* “Item 658, Delineators and Object Marker Assemblies.”

Sampling and Testing

Sampling and testing shall be in accordance with CST/M&P *Manual of Testing Procedures*.

Costs of sampling and testing are normally borne by TxDOT; however, the costs of sampling and testing of materials failing to conform to the requirements of this specification shall be borne by the manufacturer.

Costs of sampling and testing failing material shall be assessed at the rate established by the Director of CST/M&P and in effect at the time of testing.

Amounts due TxDOT for conducting such tests will be deducted from monthly or final estimates on contracts or from partial or final payments on direct purchases by the State.

Material Requirements

This specification covers the general and specific requirements for three (3) types of delineator and object marker reflector units.

Reflector Types

- ◆ Type A reflector units shall consist of Class 1 or Class 2 flat surface reflective sheeting. Class 1 and Class 2 reflective sheeting shall meet the requirements of ASTM D 4956, Type III, IV, or V.
- ◆ Type B reflector units shall consist of center-mount acrylic plastic prismatic reflector units.
- ◆ Type C reflector units shall consist of type A or type B reflector unit(s) attached to a bracket to facilitate the mounting of the delineator on concrete traffic barriers, railings, or other locations as shown on the plans. The units shall be prequalified.

Construction

Delineators or object markers shall be constructed as follows:

- ◆ Delineators, General
 - Delineators shall consist of one (1) or two (2) individual reflectorized panels of reflective sheeting or reflector units of Type A Class 1 or 2 reflector units or Type B reflector units of the color, shape, and size specified.
- ◆ Delineators for Flexible Posts
 - Delineators for flexible posts shall consist of reflective panels or individual reflector units of Type A Class 1 or 2 reflective sheeting of the color, shape, and size specified for the various types, applied directly to the post in the specified position.
- ◆ Delineators for Non-flexible Posts
 - Delineators for non-flexible posts shall consist of panels of Type A Class 1 or 2 sheeting, individual reflector units of Type A Class 1 or 2 sheeting or Type B reflector units of the color, shape, and size specified for the various types.
 - Panels or individual reflector units utilizing sheeting shall be constructed by applying the sheeting to 1.6 millimeters (0.063 inch) aluminum blanks or fiberglass reinforced plastic or other approved blank material of approved thickness of the specified size.

Object markers shall be constructed as follows:

- ◆ Types 1 and 4 shall be of the color and size specified utilizing Type B reflector units only.
- ◆ Type 2 shall be of the color, size, and type of sheeting as specified.
- ◆ Type 3 shall be of the color and size specified utilizing Type A reflective sheeting only.

NOTE: See TxDOT's Standard Plans sheet for Delineators and Object Markers

Type A Reflective Materials

Type A reflective materials shall meet the requirements of ASTM D 4956, Type III, IV, or V except where specific differences are shown.

- ◆ Specific Intensity
 - Type A reflective materials shall meet the minimum brightness values for each class when tested in accordance with Test Method "Tex-842-B, Measuring Retroreflectivity."
- ◆ Durability
 - Color shall show no appreciable change and specific intensity shall be a minimum of 80 percent of the beginning value after 2000 hours Weather-Ometer exposure.
 - The sheeting, when applied to aluminum panels, shall show no cracking, crazing, blistering, chalking, or dimensional change after Weather-Ometer exposure.
 - Weather-Ometer exposure shall be in an Atlas Weather-Ometer utilizing an 18-102 cam, in accordance with ASTM G 23-81, Method 1, Type EH. (ASTM G 23-81

reflects the specific date of issuance. Copies of this method may be obtained from Texas Department of Transportation, Construction Division, Materials & Pavements Section (CP51), 125 East 11th Street, Austin, TX 78701-2483).

◆ Adhesion

- The adhesive shall be a pressure-sensitive type and of such quality that when applied to clean aluminum at temperatures from 10 to 38 °C (50 to 100 °F), aged for 36 hours at 60 °C (140 °F), and allowed to cool to room temperature for 12 hours, the sheeting cannot be peeled or pulled from the surface in pieces greater than 1290 square millimeters (two [2] square inches).

Type B Reflector Units

Type B reflector units shall consist of center mount acrylic-plastic prismatic reflector units meeting the following requirements:

◆ Construction

- The reflector unit shall consist of a clear and transparent plastic face, referred to as the lens, and back material attached to the lens to permanently seal it against water, dust, and air.
- The lens shall consist of a smooth front surface free from projections or indentations other than for identification.
- The manufacturer's name or trademark shall be molded legibly on the lens.

◆ Design and Fabrication

- The reflector unit shall have a mounting hole in its center.
- There shall be a 4.8 millimeters (3/16 inch) inside diameter noncorrosive grommet within the mounting hole, such that the normal tightening of the mounting fastener will not fracture the seal of the reflector unit.
- The face of the reflector unit shall not be less than 4516 millimeters square (seven [7] square inches) in area.

◆ Specific Intensity

- Ninety-six percent or more of the reflector units shall equal or exceed the following minimum values of specific intensity, when tested in accordance with the Test Method "Tex-842-B, Measuring Retroreflectivity."

Minimum Values of Specific Intensity				
Observation Angle	Entrance Angle	Specific Intensity		cd/lux/unit or CP/FTC/Unit Red
		White	Yellow	
0.1	0	60	30	10
0.1	20	30	15	4
1/3	0	30	15	4
1/3	20	15	8	2

- ◆ Seal Test
 - Ninety-six percent or more of the reflector units shall pass the seal test when tested in accordance with Test Method "Tex-845-B, Testing the Seal of Reflector Units."
- ◆ Heat Test
 - The reflector units shall pass the heat test when tested in accordance with Test Method "Tex-846-B, Testing the Heat Resistance of Reflector Units."